

The following Listing of Claims will replace all prior versions, and listings, of claims in the application.

LISTING OF CLAIMS:

1. (Currently Amended) A joint (50, 60) for bringing into communication: a first fluid passageway wherethrough fluid passes; and a second fluid passageway (Pp) of a nut member (20), which comprises said second fluid passageway (Pp), a female thread part (22), and a first tapered part (21) inclined toward the outer circumferential side and toward said female thread part side; and comprising:

 a push rod (52) having a protruding portion; and

 a main body (51), comprising: having an upper end and a lower end spaced in a push rod longitudinal direction, said main body forming a push rod storage space (SPi) that houses said push rod (52) so that one part of said push rod (52) protrudes along a push rod longitudinal direction (X); and a communication path (Pi2) at said lower end for communicating with said first fluid passageway and provided in said main body on an opposite side (X2) of a push rod protruding side of the push rod storage space (SPi) in the push rod longitudinal direction (X); said protruding portion of said push rod protruding along said push rod longitudinal direction from said upper end of said main body, said main body including a seal structure forming part (53, 163) provided at an end part on a push rod protruding side (X1) in the push rod longitudinal direction (X) so that it surrounds the on an outer circumference of said push rod storage space (SPi) main body at said upper end, and capable of forming a seal structure by contacting said first tapered part (21); and a male thread part (54) capable of screwing configured to thread together with said a female thread part of a nut member (22) along the push rod longitudinal direction (X); said seal structure

forming part surrounding said push rod storage space and configured to form a seal structure
by contacting a first tapered part of the nut member wherein, when said female thread part
(22) and said male thread part (54) are screwed threaded together, then said seal structure
forming part (53, 163) contacts said first tapered part (21); and one part of the portion of said
push rod (52) protruding from said push rod storage space (SPi) contacts one a portion of said
protruding portion being configured to contact a part of said nut member when installed (20),
said push rod (52) moves being movable toward the opposite side (X2) of the push rod
protruding side said lower end of said main body along the push rod longitudinal direction
(X), and brings into communication said to communicate with a second fluid passageway of
said nut member (Pp) and said communication path (Pi2).

2. (Currently Amended) The joint (50) as recited in Claim 1, wherein
said seal structure forming part (53, 163) is a second tapered part (53) inclined toward
the outer circumferential side a large diameter of said main body and toward the opposite side
(X2) of the push rod protruding side said lower end in the push rod longitudinal direction (X).

3. (Currently Amended) The joint (50) as recited in Claim 2, wherein
an angle (δ) formed by an intersection of an inclination direction (S_{i1}) of said second
tapered part (53) with the push rod longitudinal direction (X) is less than or equal to an angle
(β) formed by an inclination direction (S_p) of the first tapered part of the nut member (21)
with the push rod longitudinal direction (X) in a state wherein in which said female thread
part (22) and said male thread part (54) are screwed threaded together.

4. (Currently Amended) The joint as recited in ~~Claim 2 or Claim 3~~, wherein said second tapered part (53) is provided with a first taper projection part (123a, 123b) that projects toward the outer ~~circumferential side; circumference~~, and said first taper projection part (123a, 123b) ~~forms~~ is configured to form a seal structure by deforming when contacting said first tapered part of the nut member (21) ~~and deforming~~.

5. (Currently Amended) The joint as recited in ~~Claim 1~~, wherein said seal structure forming part (53, 163) ~~is~~ includes a convex spherical surface part (163).

6. (Currently Amended) The joint as recited in ~~any one claim of Claim 1 through Claim 5~~, wherein said seal structure forming part (53, 163) ~~comprises~~ includes a sealing member (145, 155, 175) as a separate body, and said sealing member (145, 155, 175) ~~forms~~ is configured to form a seal structure by deforming when contacting said first tapered part (21) ~~and deforming~~.

7. (Currently Amended) The joint as recited in ~~Claim 6~~, wherein said seal structure forming part (53, 163) further ~~comprises~~ includes a groove (147, 187) for supporting said sealing member (145, 155, 175).

8. (Currently Amended) The joint (50) as recited in ~~any one claim of Claim 1 through Claim 7~~, wherein

said push rod (52) ~~comprises~~ includes a second projection part (52a) at the portion ~~said~~ protruding portion ~~from said push rod storage space (SPi)~~ and that projects toward the outer circumferential side ~~circumference~~, wherein said second projection part ~~is configured to~~ contacts said first tapered part ~~of the nut member (21)~~, and ~~said push rod (52) moves toward the opposite side (X2) of the push rod protruding side along the push rod longitudinal direction (X) and brings into communication said second fluid passageway (Pp) and said communication path (Pi2)~~.

9. (Currently Amended) The joint (50) as recited in ~~Claim~~ 8, wherein said second projection part (52a) ~~comprises~~ includes a third tapered part (52b) inclined toward the outer circumferential side ~~circumference~~ and toward the opposite side (X2) of the push rod protruding side ~~said lower end~~ in the push rod longitudinal direction (X), and said third tapered part of said push rod ~~is configured to contact~~ contacts said first tapered part ~~of the nut member (21)~~, and ~~said push rod moves toward the opposite side (X2) of the push rod protruding side along the push rod longitudinal direction (X) and brings into communication said second fluid passageway (Pp) and said communication path (Pi2)~~.

10. (Currently Amended) The joint (60) as recited in ~~any one~~ claim of ~~Claim~~ 1 through ~~Claim~~ 7, wherein

said push rod (62) ~~comprises~~ includes a fourth tapered part (62c) provided at the ~~an~~ end part on the push rod ~~said~~ protruding side (X1) in the push rod longitudinal direction (X) and portion that is inclined toward the outer circumferential side ~~circumference~~ and toward the

~~opposite side (X2) of the push rod protruding side~~ said lower end in the push rod longitudinal direction (X); and

~~said fourth tapered part contacts~~ is configured to contact said first tapered part of the nut member (21), and ~~said push rod (62) moves toward the opposite side (X2) of the push rod protruding side along the push rod longitudinal direction (X) and brings into communication~~ said second fluid passageway (Pp) and said communication path (Pi2).

11. (Currently Amended) A joint (50, 60) for bringing into communication: a third fluid passageway wherethrough fluid passes; and a fourth fluid passageway (Pf) of a piping (30), which comprises said fourth fluid passageway (Pf), and a fifth tapered part (31) inclined radially and toward an end part; and comprising:

a push rod (52) having a protruding portion; and
a main body (51), comprising: having an upper end and a lower end spaced in a push rod longitudinal direction, said main body forming a push rod storage space (SPi) that houses said push rod (52) so that one part of said push rod (52) protrudes along a push rod longitudinal direction (X); and a communication path (Pi2) at said lower end for communicating with said third fluid passageway and provided in said main body on an opposite side (X2) of a push rod protruding side of the push rod storage space (SPi) in the push rod longitudinal direction (X); said protruding portion of said push rod protruding along said push rod longitudinal direction from said upper end of said main body, said main body including a seal structure forming part (53, 163) provided at an end part of the main body on a push rod protruding side (X1) in the push rod longitudinal direction (X) so that it surrounds the on an outer circumference of said push rod storage space (SPi) main body at said upper

end, and capable of forming a seal structure by contacting said fifth tapered part (31); and, a male thread part (54), said seal structure forming part surrounding said push rod storage space and configured to form a seal structure by contacting a fifth tapered party of a piping;
and

a nut member (40) comprises: including a female thread part (42) capable of screwing together selectively threaded with said male thread part (54) along the push rod longitudinal direction (X); an opening (HL) for inserting said piping (30); and a sixth tapered part (41) inclined toward the an outer circumferential side and toward said a female thread part side; said nut member forming an opening for inserting the piping, wherein, when said seal structure forming part and said sixth tapered part are configured to sandwich and press a portion of said fifth tapered part of the piping in a state in which said female thread part (42) and said male thread part (54) are screwed together in a state wherein said and the piping (30) is inserted in said opening of said nut member (HL) so that said fifth tapered part (31) contacts said sixth tapered part (41), then said seal structure forming part (53, 163) and said sixth tapered part (41) sandwich and press one part of said fifth tapered part (31);, and one part of the portion of said push rod (52) protruding from said push rod storage space (SPi) said protruding portion contacts another part portion of the fifth tapered part (31), said push rod (52) being movable moves toward the opposite side (X2) of the push rod protruding side said lower end of said main body along the push rod longitudinal direction (X), and brings into communication said to communicate with a fourth fluid passageway (Pp) and said communication path (Pi2).

12. (Currently Amended) The joint as recited in Claim 11, wherein

said seal structure forming part (53, 163) is a seventh tapered part (53) inclined toward the outer circumferential side a large diameter of said main body and toward the opposite side (X2) of the push rod protruding side said lower end in the push rod longitudinal direction (X).

13. (Currently Amended) The joint (50) as recited in ~~Claim~~ 12, wherein an angle (δ) formed by an intersection of an inclination direction (S11) of said seventh tapered part (53) with the push rod longitudinal direction (X) is less than or equal to an angle (γ) formed by an inclination direction (Sf) of the sixth tapered part (41) with the push rod longitudinal direction (X) in a state ~~wherein~~ in which said female thread part (42) and said male thread part (54) are screwed threaded together.

14. (Currently Amended) The joint as recited in ~~Claim~~ 12 or ~~Claim~~ 13, wherein said seventh tapered part (53) is provided with a third taper projection part (123a, 123b) that projects toward the outer circumferential side ~~;circumference~~, and said third taper projection part (123a, 123b) ~~forms~~ is configured to form a seal structure by contacting said fifth tapered part of the piping (31).

15. (Currently Amended) The joint (50) as recited in ~~Claim~~ 11, wherein said seal structure forming part (53, 163) ~~is~~ includes a convex spherical surface part (163).

16. (Currently Amended) The joint as recited in ~~any one claim of~~ ~~Claim~~ 11 ~~through~~ ~~Claim~~ 15, wherein

said seal structure forming part (53, 163) ~~comprises~~ includes a sealing member (145, 155, 175) as a separate body, and said sealing member (145, 155, 175) ~~forms~~ is configured to form a seal structure by deforming when contacting said fifth tapered part (31) ~~and deforming~~.

17. (Currently Amended) The joint as recited in ~~Claim~~ 16, wherein
said seal structure forming part (53, 163) further ~~comprises~~ includes a groove (147, 187) for supporting said sealing member (145, 155, 175).

18. (Currently Amended) The joint as recited in ~~any one~~ claim of ~~Claim~~ 11
through ~~Claim~~ 17, wherein
said push rod (52) ~~comprises~~ includes a fourth projection part (52a) that projects toward the outer ~~circumferential side~~ circumference at the portion said protruding from ~~said push rod storage space portion (SPi)~~, wherein said fourth projection part is configured to contact ~~contacts~~ another part of said fifth tapered part ~~of the piping (21)~~, ~~said push rod (52)~~ moves toward the opposite side (X2) of the ~~push rod protruding side~~ along the ~~push rod longitudinal direction (X)~~, and brings into communication ~~said fourth fluid passageway (Pp)~~ and ~~said communication path (Pi2)~~.

19. (Currently Amended) The joint as recited in ~~Claim~~ 18, wherein
said fourth projection part (52a) ~~comprises~~ includes an eighth tapered part (52b) inclined toward the outer ~~circumferential side~~ circumference and toward the opposite side (X2) of the ~~push rod protruding side~~ said lower end in the push rod longitudinal direction (X), and

said eighth tapered part of said push rod ~~contacts another part of is configured to~~
~~contact said fifth tapered part of the piping (21), said push rod moves toward the opposite~~
~~side (X2) of the push rod protruding side along the push rod longitudinal direction (X), and~~
~~brings into communication said fourth fluid passageway (Pp) and said communication path~~
~~(Pi2).~~

20. (Currently Amended) The joint as recited in ~~any one claim of Claim 11~~
~~through Claim 17~~, wherein

 said push rod (62) ~~comprises~~ includes a ninth tapered part (62e) ~~provided at the an end~~
~~part on said the push rod protruding side (X1) in the push rod longitudinal direction (X) and~~
~~portion that is inclined toward the outer circumferential side circumference and toward the~~
~~opposite side (X2) of the push rod protruding side said lower end~~ in the push rod longitudinal
direction (X);, and said ninth tapered part ~~is configured to contact~~ contacts another part of
said fifth tapered part ~~of the piping (21), said push rod (62) moves toward the opposite side~~
~~(X2) of the push rod protruding side along the push rod longitudinal direction (X), and brings~~
~~into communication said fourth fluid passageway (Pp) and said communication path (Pi2).~~